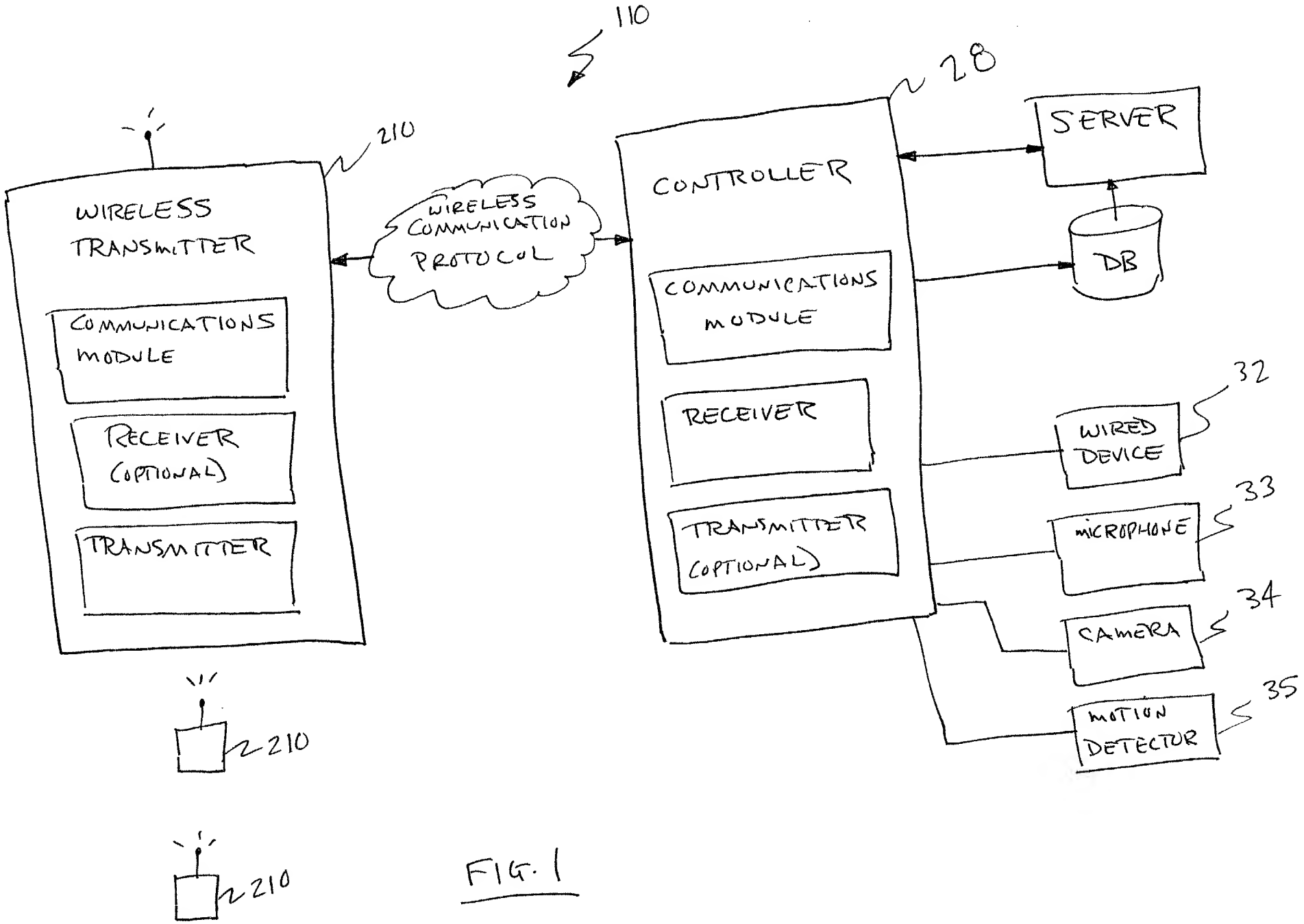

110
28
210
WIRELESS TRANSMITTER
COMMUNICATIONS MODULE
RECEIVER (OPTIONAL)
TRANSMITTER
WIRELESS COMMUNICATION PROTOCOL
CONTROLLER
COMMUNICATIONS MODULE
RECEIVER
TRANSMITTER (OPTIONAL)
SERVER
DB
32
WIRED DEVICE
33
MICROPHONE
34
CAMERA
35
MOTION DETECTOR
210
210

FIG. 1

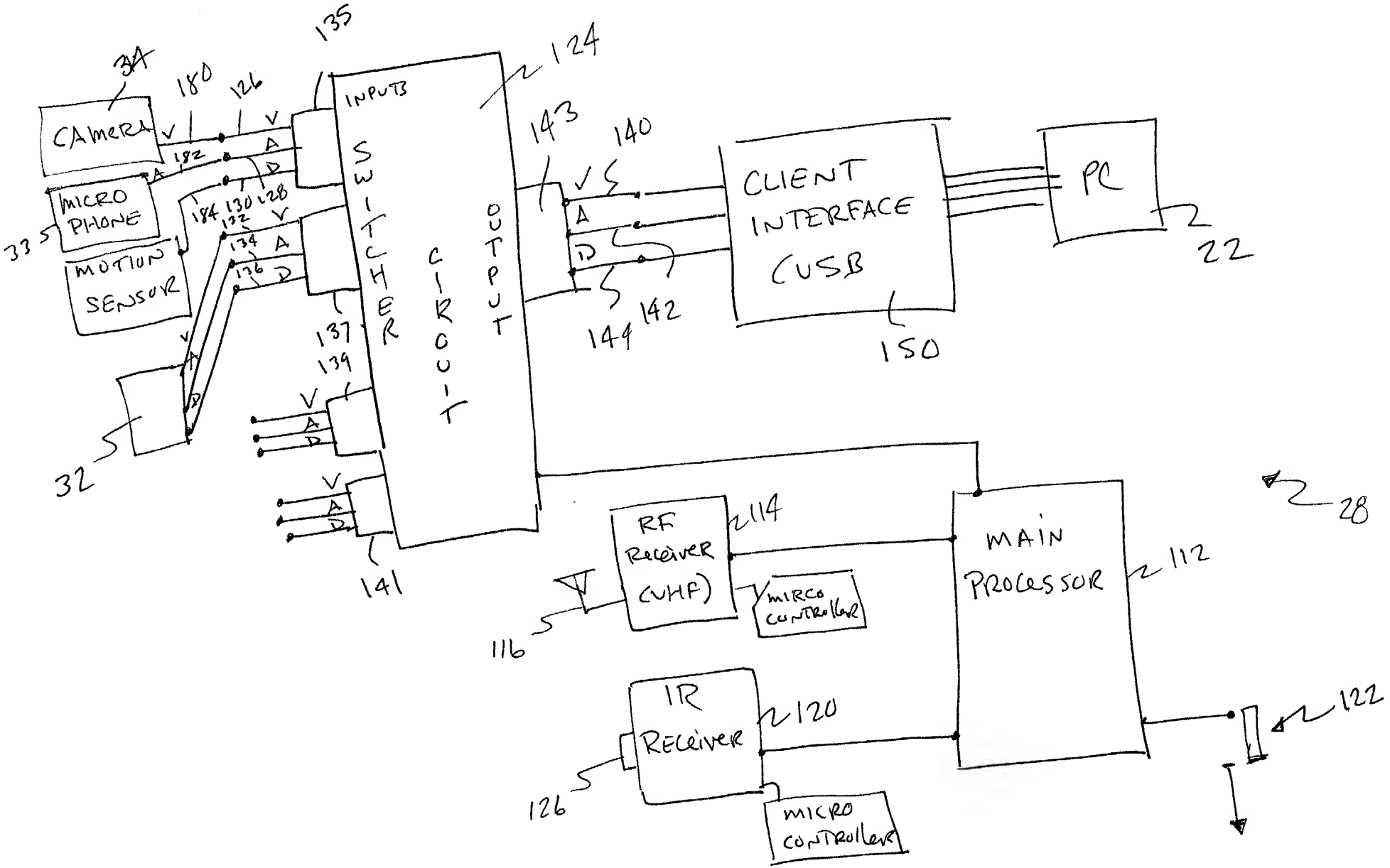

34
CAMERA
180
126
V
A
D
182
MICRO PHONE
33
MOTION SENSOR
184
130
128
132
134
136
135
INPUTS
SWITCHER CIRCUIT
OUTPUT
124
143
140
CLIENT INTERFACE CUSB
PC
22
144
142
150
137
139
32
141
RF RECEIVER (UHF)
114
MIRCO CONTROLLER
116
MAIN PROCESSOR
112
28
IR RECEIVER
120
122
126
MICRO CONTROLLER

FIG. 2

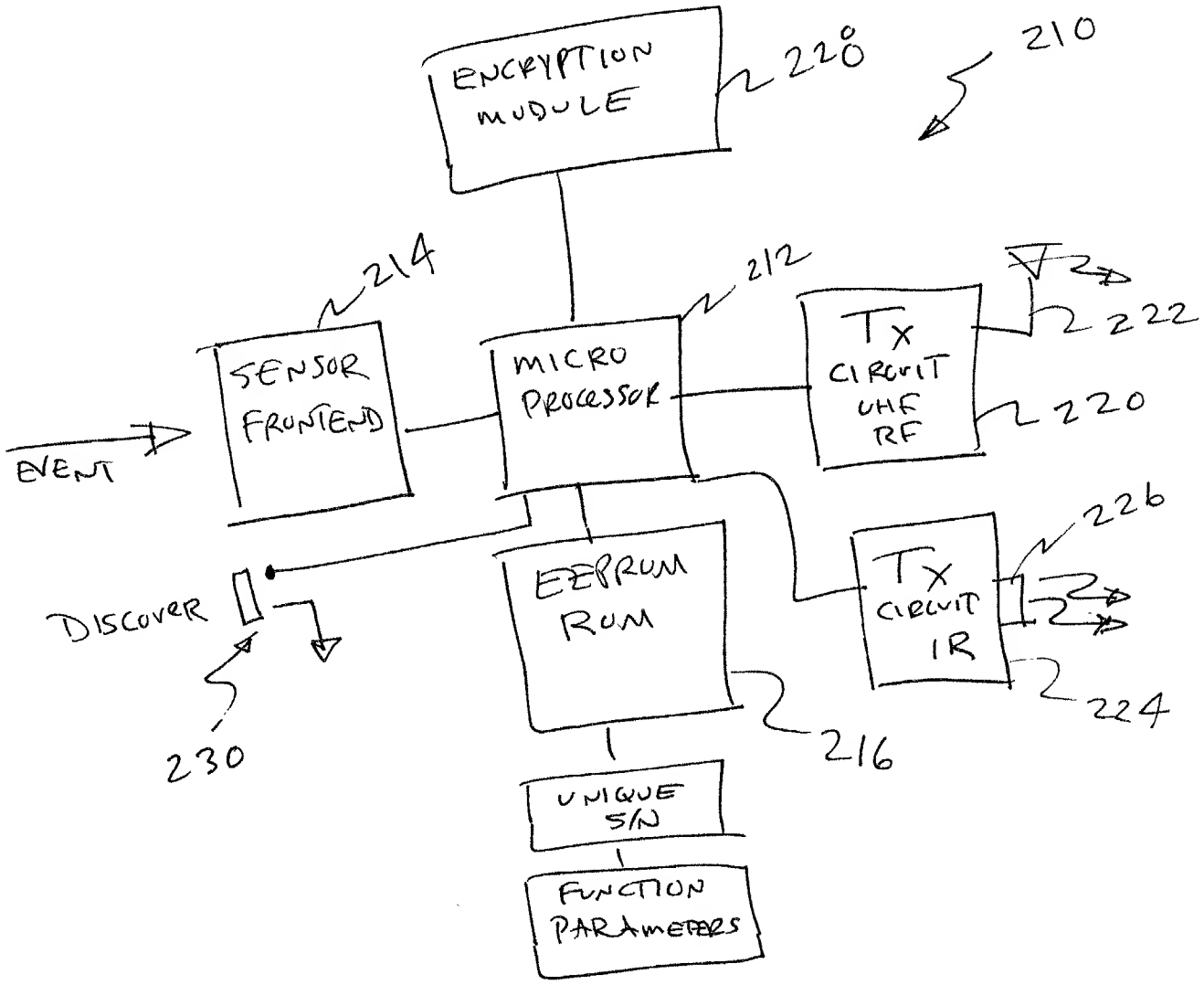

ENCRYPTION MODULE
220
210
214
212
SENSOR FRONTEND
MICRO PROCESSOR
Tx CIRCUIT UHF RF
222
220
EVENT
DISCOVER
230
EEPROM ROM
216
Tx CIRCUIT IR
226
224
UNIQUE S/N
FUNCTION PARAMETERS

FIG 3

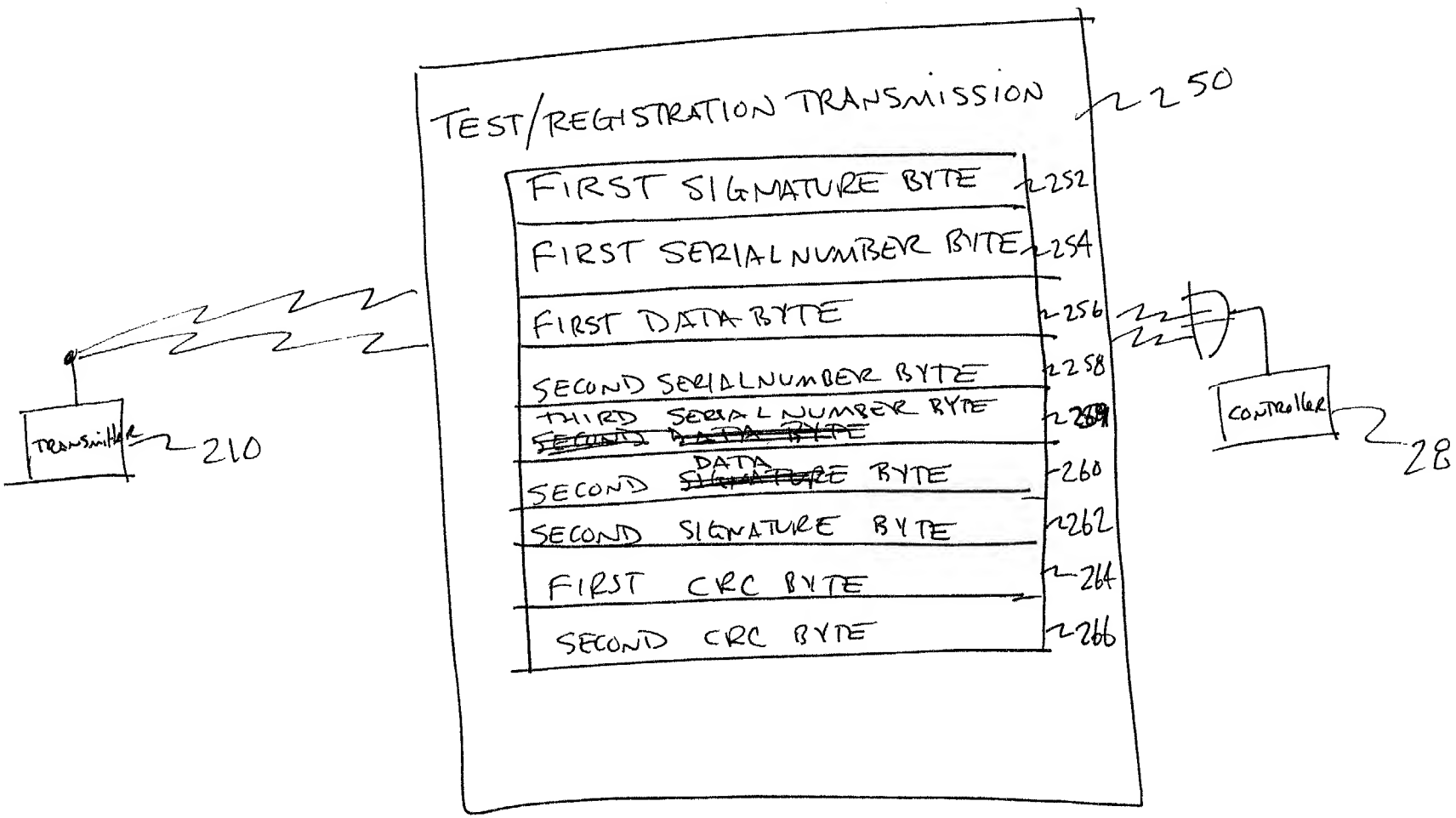

TEST/REGISTRATION TRANSMISSION
250
FIRST SIGNATURE BYTE
252
FIRST SERIAL NUMBER BYTE
254
FIRST DATA BYTE
256
SECOND SERIAL NUMBER BYTE
258
THIRD SERIAL NUMBER BYTE
SECOND DATA BYTE
SECOND DATA BYTE
260
SECOND SIGNATURE BYTE
262
FIRST CRC BYTE
264
SECOND CRC BYTE
266
TRANSMITTER
210
CONTROLLER
28

FIG. 4

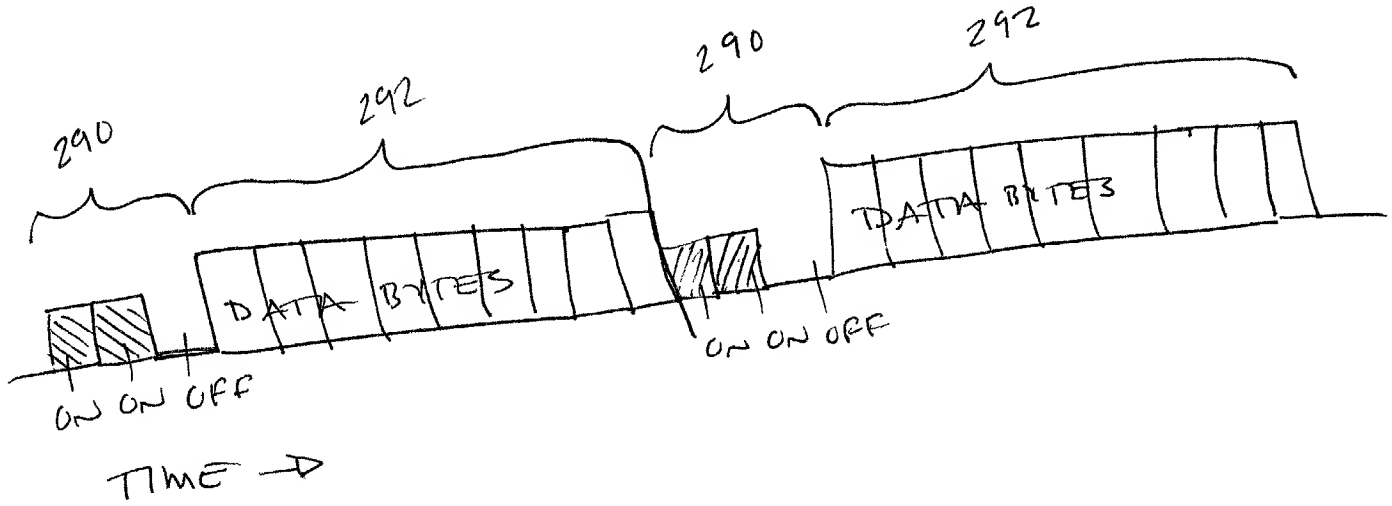


FIG. 5

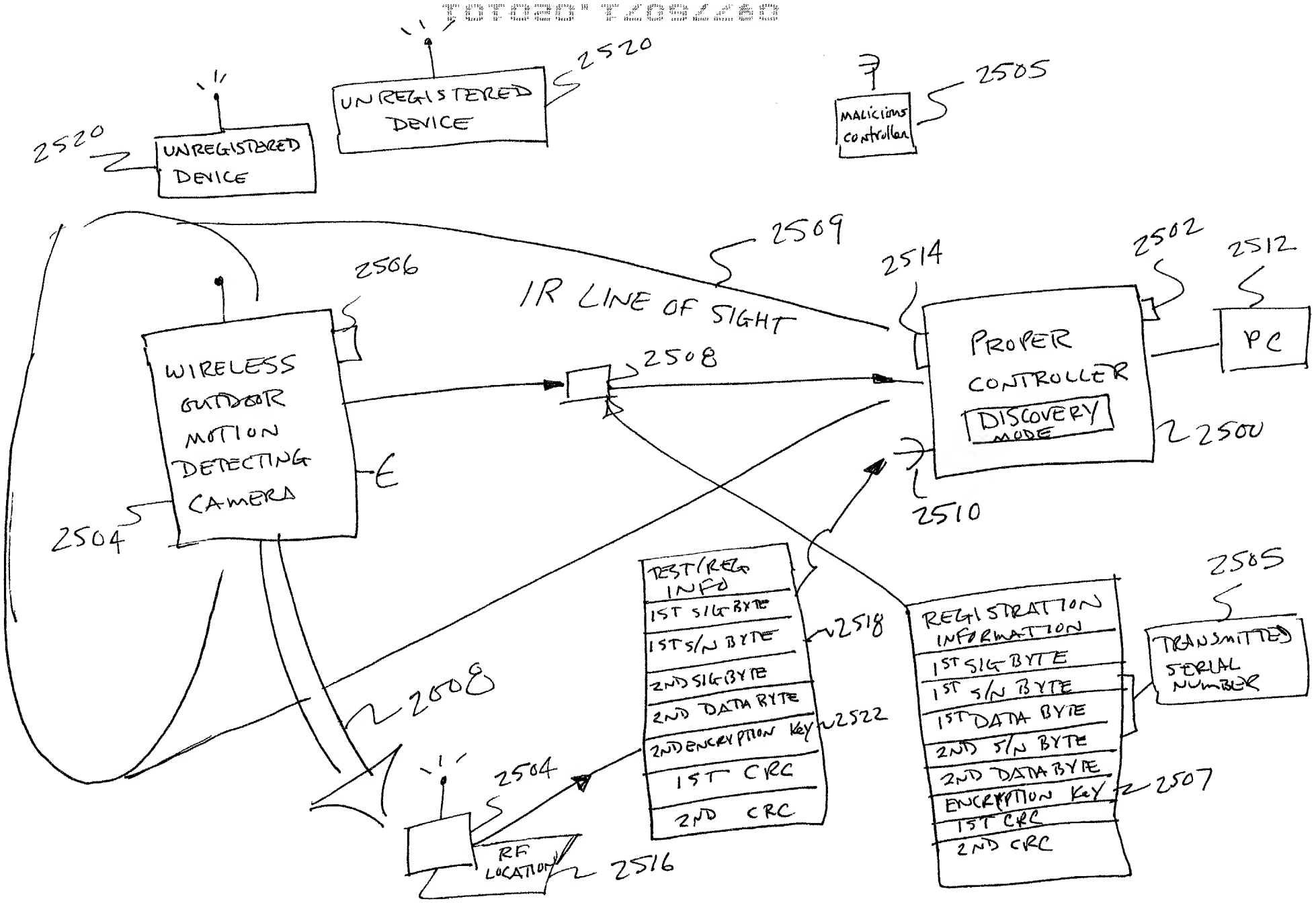

2520
UNREGISTERED DEVICE
2520
UNREGISTERED DEVICE
2505
MALICIOUS CONTROLLER
2509
IR LINE OF SIGHT
2506
WIRELESS OUTDOOR MOTION DETECTING CAMERA
2504
2508
2514
PROPER CONTROLLER
DISCOVERY MODE
2502
2512
PC
2500
2510
2508
2504
RF LOCATION
2516
TEST/REG INFO
1ST SIG BYTE
1ST S/N BYTE
2ND SIG BYTE
2ND DATA BYTE
2ND ENCRYPTION KEY
1ST CRC
2ND CRC
2518
2522
REGISTRATION INFORMATION
1ST SIG BYTE
1ST S/N BYTE
1ST DATA BYTE
2ND S/N BYTE
2ND DATA BYTE
ENCRYPTION KEY
1ST CRC
2ND CRC
2505
TRANSMITTED SERIAL NUMBER
2507

FIG 6

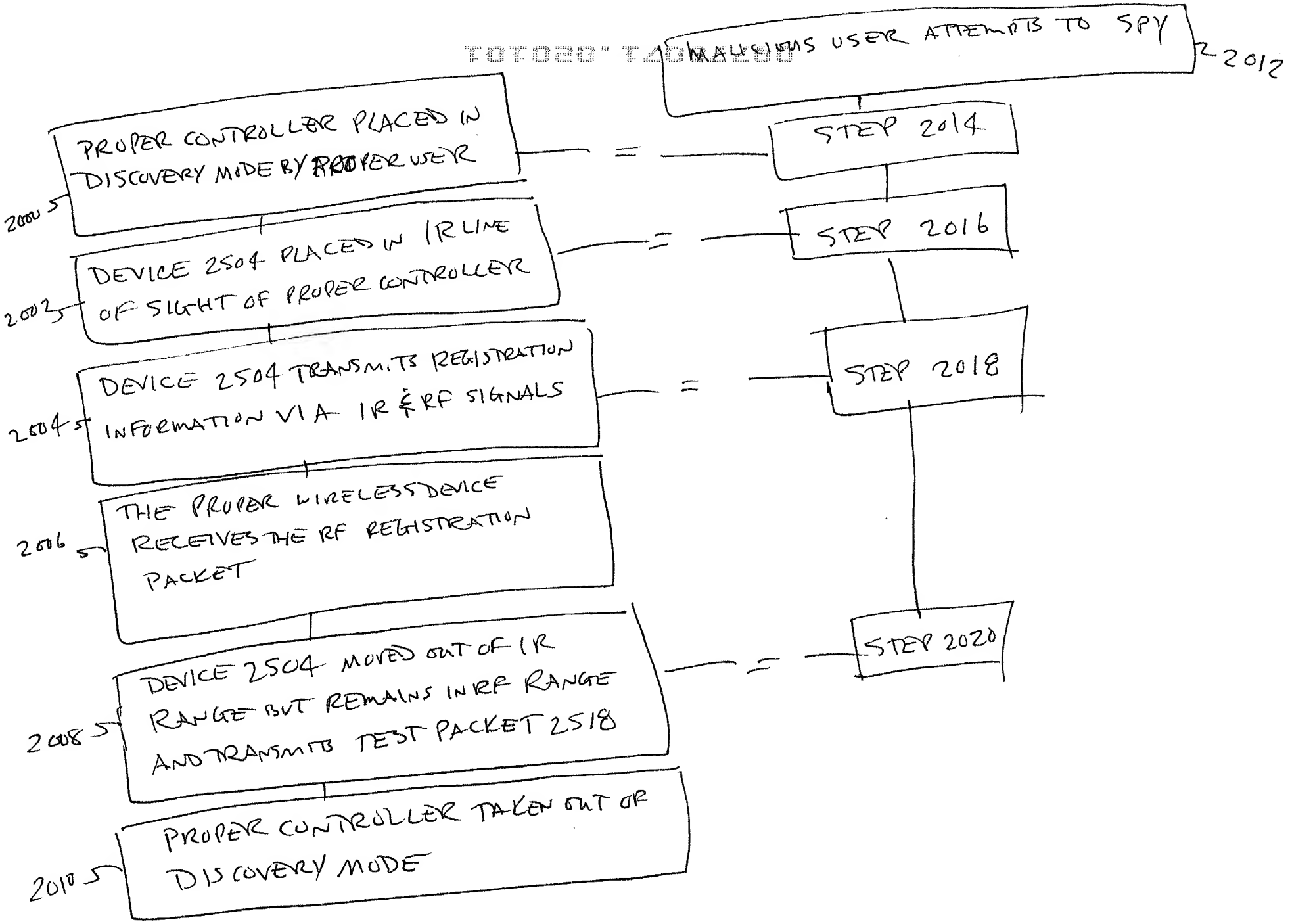

MALICIOUS USER ATTEMPTS TO SPY
2012
PROPER CONTROLLER PLACED IN DISCOVERY MODE BY PROPER USER
2000
STEP 2014
DEVICE 2504 PLACED IN IR LINE OF SIGHT OF PROPER CONTROLLER
2002
STEP 2016
DEVICE 2504 TRANSMITS REGISTRATION INFORMATION VIA IR & RF SIGNALS
2004
STEP 2018
THE PROPER WIRELESS DEVICE RECEIVES THE RF REGISTRATION PACKET
2006
DEVICE 2504 MOVED OUT OF IR RANGE BUT REMAINS IN RF RANGE AND TRANSMITS TEST PACKET 2518
2008
STEP 2020
PROPER CONTROLLER TAKEN OUT OF DISCOVERY MODE
2010

FIG. 7

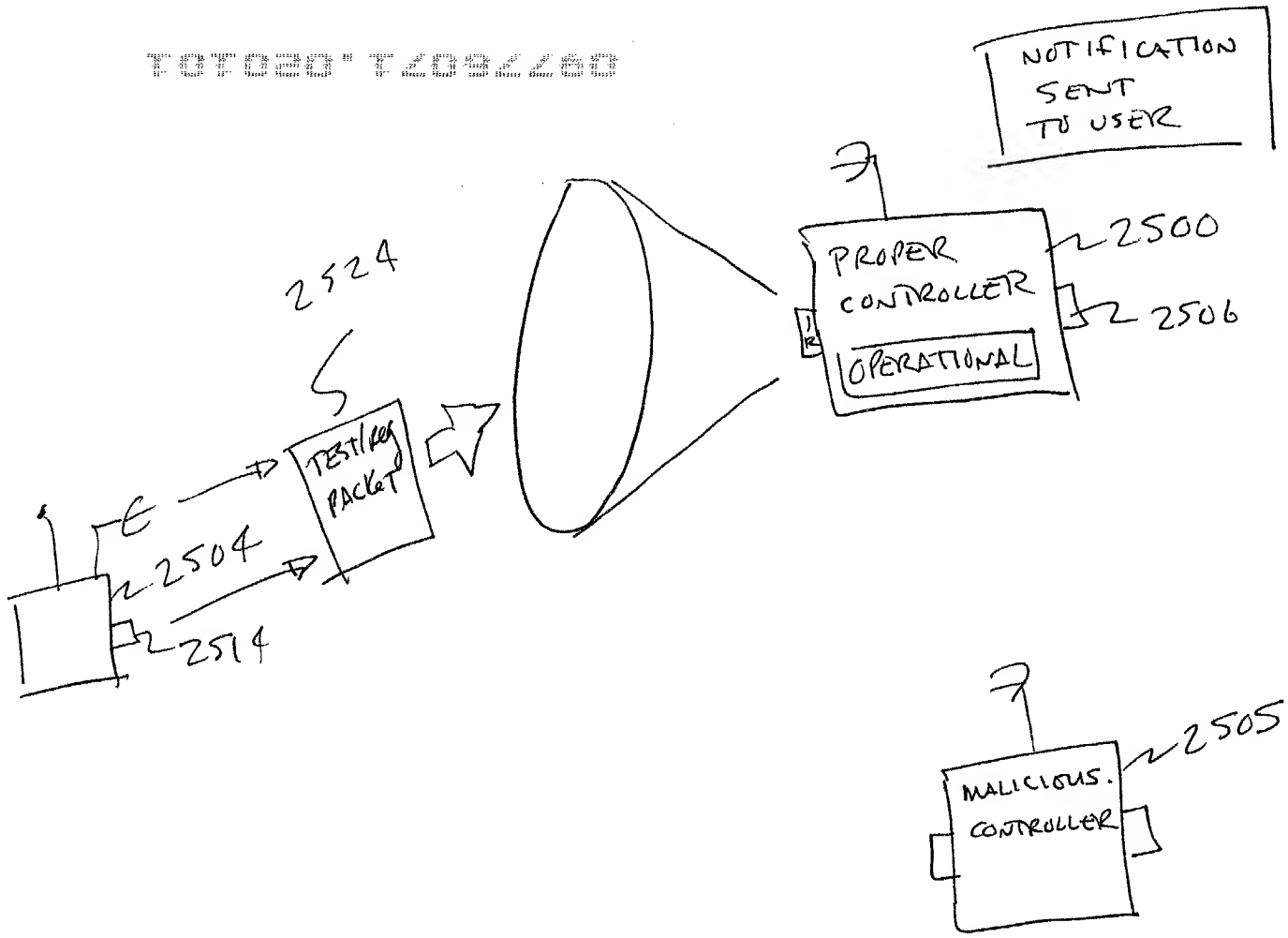

NOTIFICATION SENT TO USER
2524
PROPER CONTROLLER
OPERATIONAL
2500
2506
TEST/KEY PACKET
2504
2514
MALICIOUS. CONTROLLER
2505

FIG. 8

FIG.9

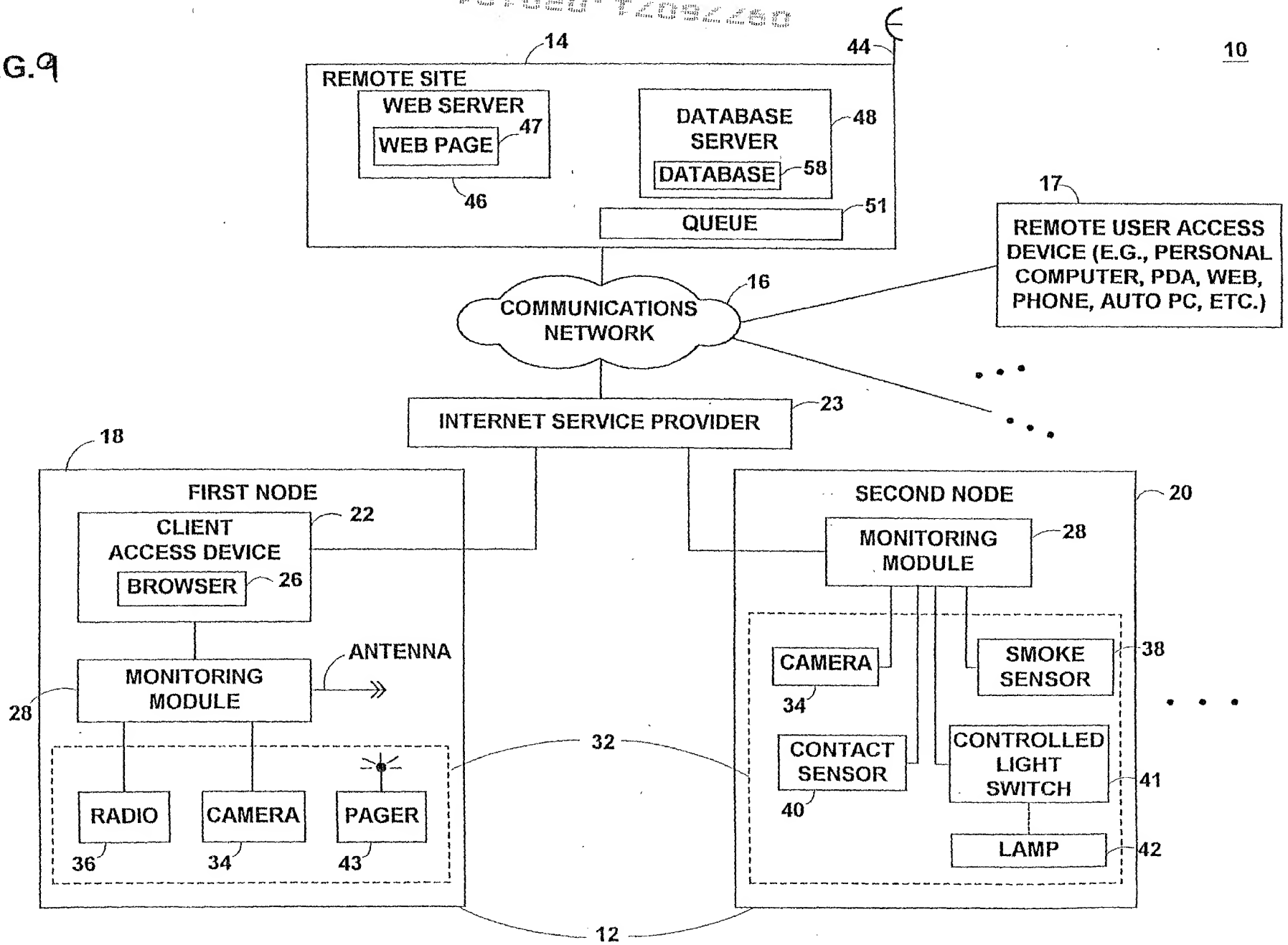
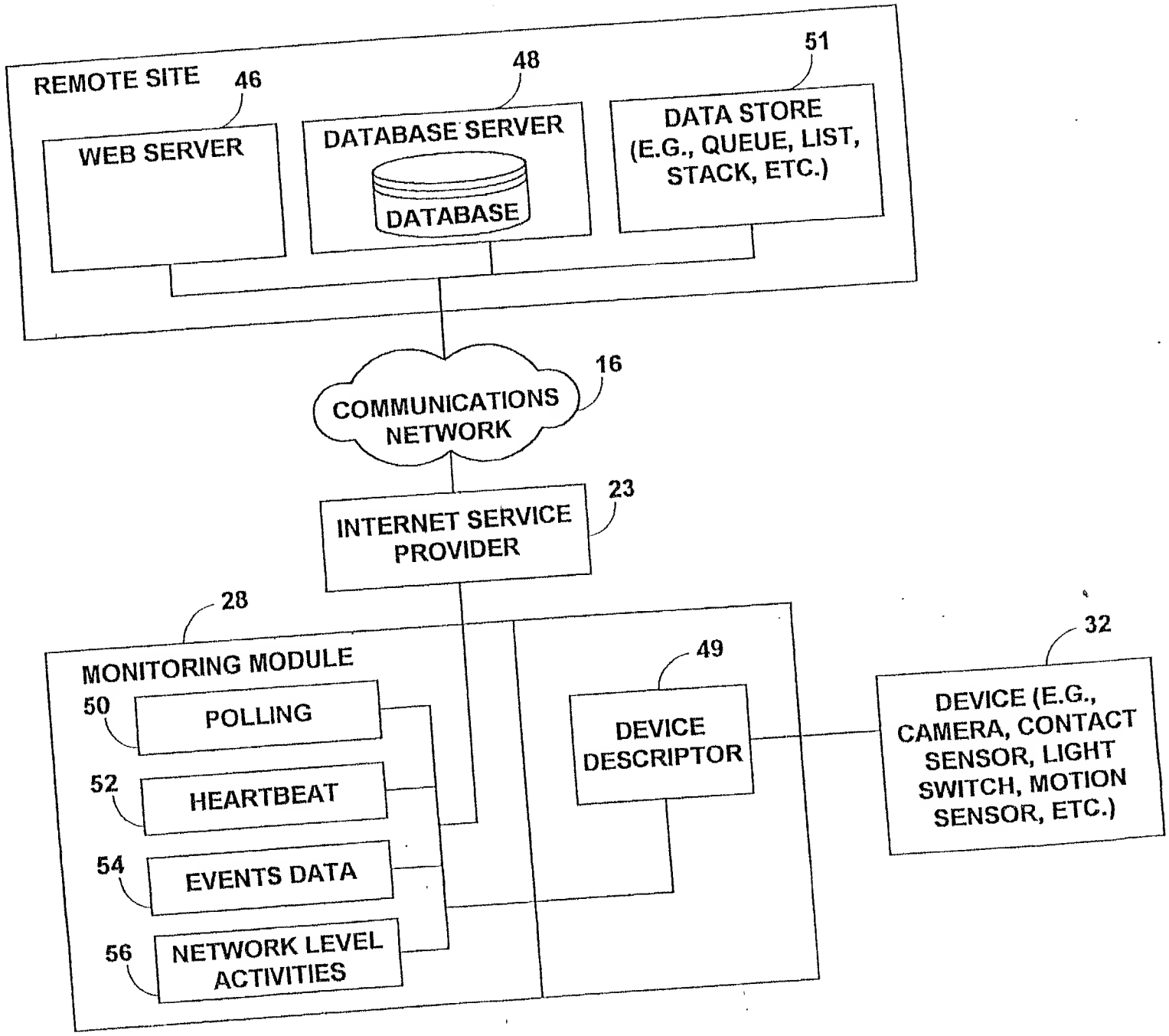

10
14
44
REMOTE SITE
WEB SERVER
47
WEB PAGE
46
DATABASE SERVER
48
DATABASE
58
QUEUE
51
17
REMOTE USER ACCESS DEVICE (E.G., PERSONAL COMPUTER, PDA, WEB, PHONE, AUTO PC, ETC.)
16
COMMUNICATIONS NETWORK
23
INTERNET SERVICE PROVIDER
18
FIRST NODE
CLIENT ACCESS DEVICE
22
BROWSER
26
ANTENNA
MONITORING MODULE
28
RADIO
36
CAMERA
34
PAGER
43
32
12
SECOND NODE
20
MONITORING MODULE
28
CAMERA
34
SMOKE SENSOR
38
CONTACT SENSOR
40
CONTROLLED LIGHT SWITCH
41
LAMP
42

FIG. 10


REMOTE SITE
46
WEB SERVER
48
DATABASE SERVER
DATABASE
51
DATA STORE
(E.G., QUEUE, LIST, STACK, ETC.)
16
COMMUNICATIONS NETWORK
23
INTERNET SERVICE PROVIDER
28
MONITORING MODULE
50
POLLING
52
HEARTBEAT
54
EVENTS DATA
56
NETWORK LEVEL ACTIVITIES
49
DEVICE DESCRIPTOR
32
DEVICE (E.G., CAMERA, CONTACT SENSOR, LIGHT SWITCH, MOTION SENSOR, ETC.)

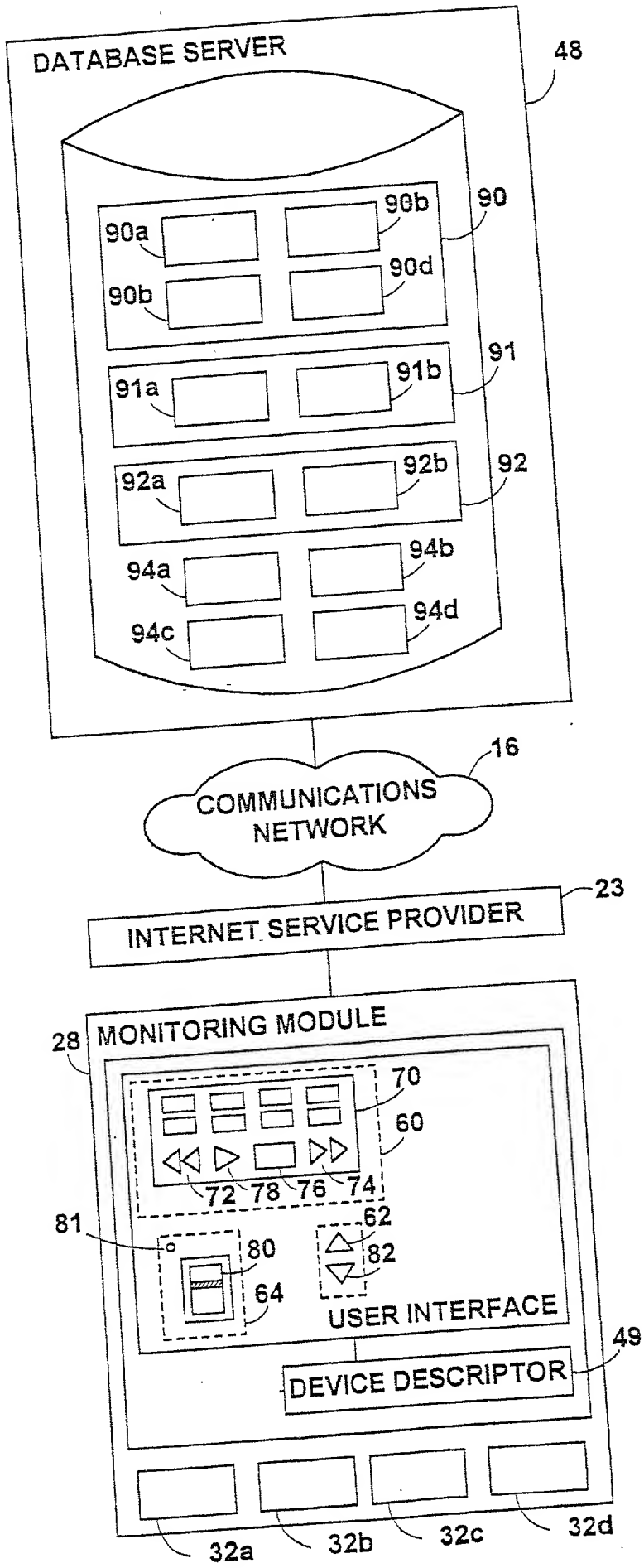

DATABASE SERVER
48
90
90a
90b
90b
90d
91
91a
91b
92
92a
92b
94a
94b
94c
94d
16
COMMUNICATIONS NETWORK
23
INTERNET SERVICE PROVIDER
28
MONITORING MODULE
70
60
72
78
76
74
81
62
80
82
64
USER INTERFACE
49
DEVICE DESCRIPTOR
32a
32b
32c
32d

FIG. 1